

Report of Findings

Case Number: 2017-00704

ATKINS, KEISHA

County Pronounced: Bernalillo

Law Enforcement:

Agent:

Date of Birth: 6/7/1993

Pronounced Date/Time: 2/4/2017 12:10:00 AM

Central Office Investigator: Colt Kalcich

Deputy Field Investigator: Colt Kalcich COI

CAUSE OF DEATH

Pulmonary thromboembolism

Due to

Pregnancy

MANNER OF DEATH

Natural

Rebecca Asch-Kendrick, MD

Forensic Pathology Fellow

Lauren E Dvorscak, MD

Medical Investigator, Assistant Professor of
Pathology

All signatures authenticated electronically

Date: 5/25/2017 1:31:28 PM

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

SUMMARY AND OPINION

PATHOLOGIC DIAGNOSES:

- I. Pulmonary thromboembolism
 - A. Extensive organizing thromboemboli, bilateral pulmonary arterial vasculature
 - B. Pulmonary edema
 - C. Clinical echocardiogram demonstrated reduced ventricular function
- II. Clinical evidence of septic abortion, per medical records
 - ✓ A. Status post fetal abortion by dilatation and evacuation
 - 1. Catheter placement, uterus
 - 2. Complete products of conception and intact placenta with trivascular umbilical cord
 - B. Antemortem blood culture positive for *Aerococcus* species (per medical records)
 - C. Postmortem uterine swabs/tissue cultures grew rare to few colony growth of *Aerococcus* species
 - D. Uterine endometritis
 - 1. Microscopic neutrophilic exudates, uterine endometrium and maternal surface of placenta
- III. Pleural effusions
 - 1. Left chest cavity, 600 mL serous fluid
 - 2. Right chest cavity, 600 mL serous fluid
- IV. Clinical evidence of acute coagulopathy, per medical records
 - A. Bloody fluid, 100 mL, peritoneal cavity
 - B. Fibrin microthrombi, glomerular
 - C. Parenchymal hemorrhage, left adrenal gland
- ✓ D. Status post multiple blood product transfusions
- V. Status post extensive resuscitation attempts
 - A. Contusions, chest
 - B. Rib fractures, anterolateral
- VI. Probe patent foramen ovale
- VII. Contusions, minor, extremities

SUMMARY AND OPINION:

This 23 year old woman, Keisha Atkins, died of pulmonary thromboembolism due to pregnancy.

- ✓ According to reports, Ms. Atkins was at a clinic preparing for the final portion of a termination of pregnancy. She presented to the clinic with complaints of cramping pain as expected and was resting preparing for labor. While at the clinic, she noted that she was feeling short of breath, and her oxygen saturation dropped below her baseline. She was placed on oxygen with some improvement of her symptoms. Due to the concerning symptoms, she transferred to University of New Mexico Hospitals, where she continued to have cramping abdominal pain, elevated heart rate and difficulty maintaining normal blood oxygen levels despite supplemental oxygen therapy.

At the hospital, initial testing revealed fluid buildup in the lungs (pulmonary edema), without evidence of significant blood clots, and evaluation of her heart revealed reduced ventricular (pumping chamber) function. Due to rapid decompensation in her clinical status (requiring the placement of a breathing tube) and the concern for a significant infection, she was taken emergently to the operating room to complete the abortion procedure. During the operation, she sustained a cardiac arrest. Extensive resuscitation efforts were ultimately unsuccessful.

Bacterial cultures taken during her hospital admission ultimately grew *Aerococcus* species in the blood and mixed organisms (including *Aerococcus* species) in the placental tissue.

Autopsy examination revealed a well-developed, well-nourished young woman with extensive medical intervention. Internal and microscopic examination revealed large, organizing, bilateral pulmonary thromboemboli (large blood clots in the arteries of the lungs). Additional autopsy findings included pulmonary edema with large pleural effusions (fluid in and around the lungs), and a boggy, intact uterus, consistent with recent pregnancy. The lining of the uterus, as well as

the maternal surface of the placenta showed acute inflammation, consistent with the clinical picture of a septic abortion. The placenta and products of conception were otherwise unremarkable. Incidental findings included a patent foramen ovale (opening between two chambers in the heart). Injuries including bruising on the chest and rib fractures were most consistent with resuscitation attempts. The only other injuries detected were minor scattered bruises on the arms and legs.

Toxicology analysis of the antemortem blood revealed a therapeutic level of oxycodone and its breakdown product, oxymorphone.

Postmortem microbiological cultures of the uterus were positive for rare to few colony growth of *Aerococcus* species. Postmortem bacterial cultures of the heart blood and lungs grew many types of organisms, most consistent with postmortem bacterial overgrowth and/or contamination.

Pulmonary thromboembolism, or blood clots that occlude the arteries of the lungs, may be rapidly fatal, causing death by blocking normal blood flow to the lungs and preventing the normal oxygenation of tissues.

Clinically, Ms. Atkins's evaluation (by CT angiography) for pulmonary thromboembolism (blood clot in the lungs) was negative at her presentation to the hospital. A review of the literature reveals that falsely negative results for this test are typically rare, but such rates have been reported to be as high as 10.7% in one study (1). Essentially, even though the clinical test for a blood clot was negative, Ms. Atkins did have a significant blood clot in her lungs at the time of autopsy that caused her sudden and unexpected death.

When the arteries in the lungs are significantly occluded (blocked) by thromboemboli (blood clots), symptoms and signs such as shortness of breath, increased heart rate, decreased oxygenation of the blood, and chest pain may occur. Ms. Atkins experienced many of these symptoms, along with a rapid deterioration in her respiratory function, reduced heart function, and fluid buildup in her lungs. These clinical findings are all consistent with the postmortem findings of large blood clots in her lungs.

Most often, a blood clot in the lungs actually originates from another source such as the deep leg veins. Risk factors for the development of blood clots include hypercoagulable states, such as pregnancy, among other factors such as high blood pressure, smoking, obesity, and immobility. Ms. Atkins's pregnancy ultimately placed her at increased probability of developing blood clots, which occur at approximately a 4 fold higher rate in pregnant women when compared to the general population (2-4). Pulmonary embolism is the 6th leading cause of maternal mortality in the United States (2-4). ✓

To further complicate her clinical picture, Ms. Atkins also had a high white blood cell count and other clinical features concerning for sepsis (or widespread inflammation and infection) upon her hospital admission. At autopsy, Ms. Atkins did have some evidence of acute inflammation and a positive postmortem bacterial culture for *Aerococcus* species. However, her overall condition in the hospital was remarkable for significant respiratory distress that decompensated rapidly. While she likely did have an infection from the abortion process, the blockage of her pulmonary arteries by blood clots would have caused the rapid clinical symptoms leading to death, even without infectious or inflammatory complications. The cause of death, therefore, is best certified as pulmonary thromboembolism due to pregnancy. The manner of death is natural. ✓

REFERENCES:

1. Hogg K, Brown G, Dunning J, Wright H, Carley S, Foex B, and Mackway-Jones K. Diagnosis of pulmonary embolism with CT pulmonary angiography: a systematic review. *Emerg Med J.* 2006;23:172-178.
2. Marik PE, Plante LA. Venous thromboembolic disease and pregnancy. *N Engl J Med.* 2008;359(19):2025.
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DEATH INVESTIGATION SUMMARY

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Date: 5/25/2017 1:31:28 PM

DECLARATION

The death of ATKINS, KEISHA was investigated by the Office of the Medical Investigator under the statutory authority of the Office of the Medical Investigator.

I, Lauren E Dvorscak, MD, a board certified anatomic, clinical, and forensic pathologist licensed to practice pathology in the State of New Mexico, do declare that I personally performed or supervised the tasks described within this Death Investigation Summary document. It is only after careful consideration of all data available to me at the time that this report was finalized that I attest to the diagnoses and opinions stated herein.

Numerous photographs were obtained along the course of the examination. I have personally reviewed those photographs and attest that they are representative of findings reported in this document.

This document is divided into 8 sections with a final Procedural Notes section:

1. Summary and Opinion
2. External Examination
3. Medical Intervention
4. Postmortem Changes
5. Evidence of Injuries
6. Internal Examination
7. Microscopy
8. Ancillary Lab Studies

Should you have questions after review of this material, please feel free to contact me at the Office of the Medical Investigator (Albuquerque, New Mexico) - 505-272-3053.

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

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REFERENCES:

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Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

External exam date time: 2/4/2017 9:13:00 AM
Authority for examination: OMI
ID confirmed at time of exam: Yes
Means used to confirm identity: Visual
Other verification means:
Location of orange bracelet: Left wrist
Name on orange bracelet: Decedent name
Other name on orange bracelet:
Location of green bracelet: Left wrist
Name on green bracelet: Decedent name
Other name on green bracelet:
Hospital ID tags or bracelets? Yes
If yes specify stated name and location: Right ankle decedent name
Body length (cm): 162.00
Body weight (kgs): 67.40
BMI: 25.68

Development: Well-developed
Development comments:
Stature: Well-nourished
Age: Appears to be stated age
Anasarca: No
Edema localized: No
Dehydration: No
Scalp hair color: Brown
Scalp hair color comments:
The roots are dark with blonde ends.
Scalp hair length: Long
Eyes: Both eyes present
Irides: Brown
Eyes corneae: Translucent
Eyes sclerae: White
Eyes conjunctivae: Translucent
Eyes petechiae: No
Palpebral petechiae: No
Bulbar petechiae: No
Facial petechiae: No

Oral mucosal petechiae:	No
Nose:	Normally formed
Ears:	Normally formed
Lips:	Normally formed
Facial hair:	None
Facial hair color:	Does not apply
Maxillary dentition:	Natural
Mandibular dentition:	Natural
Condition of dentition:	Adequate
Neck:	Unremarkable
Trachea midline:	Yes
Chest development:	Normal
Chest symmetrical:	Yes
Chest diameter:	Appropriate
Abdomen:	Protuberant
Anus:	Unremarkable
Back:	Unremarkable
Spine:	Normal
External genitalia:	Female
Breast development:	Symmetric
Breast masses:	None
Right hand digits complete:	Yes
Left hand digits complete:	Yes
Right foot digits complete:	Yes
Left foot digits complete:	Yes
Extremities:	Well-developed and symmetrical
Muscle group atrophy:	No
Senile purpura:	No
Pitting edema:	No
Muscle other:	No

Tattoo(s)

Tattoos present:	Yes
Tattoo anterior chest:	Yes
Tattoo back:	Yes
Tattoo right forearm:	Yes
Tattoo left shoulder:	Yes
Tattoo left arm:	Yes
Tattoo left forearm:	Yes
Tattoo right lower leg:	Yes
Tattoo left thigh:	Yes
Tattoo left lower leg:	Yes

Cosmetic Piercing(s)

Cosmetic piercing present: Yes
Cosmetic piercing right ear: Yes
Cosmetic piercing left ear: Yes
Cosmetic piercing lower lip: Yes
Cosmetic piercing umbilicus: Yes

Scar(s)

Scar(s) present: Yes
Scar right knee: Yes
Scar left knee: Yes

Reporting Tracking

Reported by: Rebecca Asch-Kendrick, MD
Verified by: Lauren E Dvorscak, MD on 5/25/2017 9:58:26 AM
Reviewed and approved by: Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

Evidence of medical intervention: Yes

Indwelling Tubes

If nasogastric tube present, specify course and position: No

If endotracheal tube present, specify course and position: Yes

Endotracheal tube: Passes through the mouth and oropharynx, between the vocal folds and terminates in the trachea proximal to the carina

Endotracheal tube comment:

Tracheostomy site/tube: No

Mediastinal tube(s): No

Chest tube(s): No

If Foley catheter present, specify course and position: Yes

Foley catheter: Other

Foley catheter comment:

A catheter passes through the cervix and terminates in the uterus.

Medical intervention other:

Injuries associated with cardiopulmonary resuscitation attempts include multiple, bilateral, anterolateral rib fractures and scattered contusions on the central chest.

A pulse oximeter monitor is on left hand.

Electrocardiogram (ECG) Monitoring Pads

ECG Monitoring Pads Present?: Yes

ECG Chest Pads: Yes

ECG abdomen pads: Yes

Other pads comments:

Defibrillator Pads

Defibrillator pads present?: Yes

Left Lower outer chest: Yes

Back: Yes

Vascular Catheter(s):

Vascular catheter(s): Yes

Right internal jugular vein: Yes

Right femoral vein: Yes

Posterior aspect of right hand: Yes

Left antecubital fossa: Yes

Posterior aspect of left hand: Yes

Vascular catheter(s) comments:

An additional vascular catheter is in the right arm.

Recent Surgical Intervention

**Evidence of recent surgical
intervention:**

No

Report Tracking

Reported by:

Rebecca Asch-Kendrick, MD

Verified by:

Lauren E Dvorscak, MD on 5/25/2017 9:49:21 AM

Reviewed and approved by:

Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

External exam date: 2/4/2017 9:13:00 AM
Body temperature: Cool subsequent to refrigeration
Rigor mortis: Fully fixed
Livor mortis - color: Purple
Livor mortis - fixation (if applicable): Fully Fixed
Livor mortis - position (if applicable): Both anterior and posterior
Livor mortis - blanching and patterns (if applicable):
The head, neck, and upper chest are congested.
State of preservation: No decomposition

Report Tracking

Reported by: Rebecca Asch-Kendrick, MD
Verified by: Lauren E Dvorscak, MD on 5/25/2017 9:59:24 AM
Reviewed and approved by: Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

Are there any injuries: Yes

Evidence of Injury:

Autopsy date: 2/4/2017 9:13:00 AM

#	Injury	Location	Injury Description
1	Blunt injury	Extremities	Scattered, 0.1 - 0.4 cm, purple contusions are on the upper and lower extremities.

Report Tracking

Reported by: Rebecca Asch-Kendrick, MD
Verified by: Lauren E Dvorscak, MD on 5/25/2017 9:59:56 AM
Reviewed and approved by: Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

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Rebecca Asch-Kendrick, MD

Date of Autopsy: 2/4/2017 9:13:00 AM

Date of Internal Exam: 2/4/2017 9:13:00 AM

BODY CAVITIES

Chest cavities examined: Yes

See evidence of injury section No

Organs in normal anatomic position Yes

Other organ position comments

Diaphragm: Intact

Serosal surfaces: Smooth and glistening

Body cavity adhesions present: No

Fluid accumulation present: Yes

Fluid accumulation right chest cavity: Yes

Fluid accumulation left chest cavity Yes

Fluid accumulation pericardial sac: No

Fluid accumulation abdominal cavity: Yes

Fluid accumulation pelvis: Yes

Fluid accumulation comments:

Left chest - 600 mL serous fluid

Right chest - 600 mL serous fluid

Abdomen and pelvis - 100 mL bloody fluid

HEAD

Brain examined: Yes

See separate forensic neuropathology consultation report No

See evidence of injury section: No

See evidence of medical Intervention section: No

See postmortem changes section: No

Brain fresh (g): 1155

Brain fixed (g):

Facial skeleton: No palpable fractures

Calvarium: No fractures

Skull base: No fractures

Skull comments:

Dura mater: Unremarkable and without masses

Dural venous sinuses: Patent

Leptomeninges: Thin and transparent

Epidural hemorrhages / hematomas:	Absent
Subdural hemorrhages / hematomas:	Absent
Subarachnoid hemorrhages:	Absent
Cerebral hemispheres:	Symmetrical
Gyral and sulcal patterns:	Unremarkable
Gyral convolutions and sulci:	No widening or flattening of gyri and no narrowing of sulci
Uncal processes:	Unremarkable
Cerebellar tonsils:	Unremarkable
Cranial nerves:	Unremarkable
Basilar arterial vasculature:	Unremarkable
Cerebral cortex:	Unremarkable
White matter:	Unremarkable
Corpus callosum:	Unremarkable
Deep gray matter structures:	Unremarkable
Brainstem:	Unremarkable
Cerebellum:	Unremarkable

Spinal Cord

Spinal cord examined:	No
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Middle Ears

Middle ears examined:	No
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Neck

Neck examined:	Yes
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See Evidence of Injury section:	No
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See Evidence of Medical Intervention section	No
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See Postmortem Changes section:	No
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Subcutaneous soft tissues:	Unremarkable
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Strap muscles:	Unremarkable
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Jugular veins:	Unremarkable
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Carotid arteries:	Unremarkable
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Tongue:	Unremarkable
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Epiglottis:	Unremarkable
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Hyoid bone:	Unremarkable
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Larynx:	Unremarkable
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Palatine tonsils:	Not examined
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CARDIOVASCULAR SYSTEM

Heart examined:	Yes
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See separate Cardiovascular Pathology report:	No
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See Evidence of Injury section:	No
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See Evidence of Medical Intervention section:	No
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See Postmortem Changes section: No

Heart

Right coronary ostium position: Normal

Left coronary ostium position: Normal

Supply of the posterior myocardium: Right coronary artery

Heart fresh (g): 290.0

Heart fixed (g):

Coronary artery stenosis by atherosclerosis (in percent):

Right coronary ostium: 0

Proximal third right coronary artery: 0

Middle third right coronary artery: 0

Distal third right coronary artery: 0

Left coronary ostium: 0

Left main coronary artery: 0

Proximal third left anterior descending coronary artery: 0

Middle third left anterior descending coronary artery: 0

Distal third left anterior descending coronary artery: 0

Proximal third left circumflex coronary artery: 0

Middle third left circumflex coronary artery: 0

Distal third left circumflex coronary artery: 0

Cardiac Chambers and Valves:

Cardiac chambers: Unremarkable

Tricuspid valve: Unremarkable

Pulmonic valve: Unremarkable

Mitral valve: Unremarkable

Aortic valve: Unremarkable

Other valve comments:

Circumferential valvular measurements are as follows:

Tricuspid valve = 11 cm

Pulmonic valve = 5 cm

Mitral valve = 8.5 cm

Aortic valve = 6 cm

Right ventricular myocardium: No fibrosis, erythema, pathologic infiltration of adipose tissue or areas of accentuated softening or induration

Left ventricular myocardium: No fibrosis, erythema, or areas of accentuated softening or induration

Atrial septum: Other - See comments

Ventricular septum: Unremarkable

Other septal comments:

The foramen ovale is probe-patent.

Right ventricular free wall thickness: 0.2 cm

Left ventricular free wall thickness: 0.8 cm

Interventricular septum thickness: 0.8 cm

Aorta

Aorta examined: Yes

Orifices of the major vascular branches: Patent

Coarctation: No

Vascular dissection: No

Aneurysm formation: No

Complex atherosclerosis: No

Other aortic pathology: No

Vena Cava

Great vessels examined: Yes

Vena cava and major tributaries: Patent

RESPIRATORY SYSTEM

Lungs examined: Yes

See separate Cardiovascular Pathology report: No

See Evidence of Injury section: No

See Evidence of Medical Intervention section: No

See Postmortem Changes section: No

Lung right (g): 735

Lung left (g): 950

Upper and lower airways: Unobstructed, and the mucosal surfaces are smooth and yellow-tan

Pulmonary parenchyma color: Dark red-purple

Pulmonary parenchyma congestion and edema: Slight amounts of blood and frothy fluid

Pulmonary trunk: Other - See comments

Pulmonary artery thrombi: Other - See comments

Pulmonary artery atherosclerosis: None

Other airway and lung comments:

Bilateral organizing blood clots occlude the pulmonary artery vasculature. A true saddle embolism is not detected, however the the blood clots extend from the hilum of both the right and left lungs, into the peripheral vasculature and are partially adherent to the arterial walls. ✓

HEPATOBIILIARY SYSTEM

Liver examined: Yes

See Evidence of Injury section: No

See Evidence of Medical Intervention section: No

See Postmortem Changes section: No

Liver (g): 1675
Bile vol (mL):
Gallstones autopsy: No
Gallstones autopsy desc:
Hepatic parenchyma (color): Red-brown
Hepatic parenchyma (texture): Unremarkable
Hepatic vasculature: Unremarkable and free of thrombus
Gallbladder: Unremarkable
Gallstones: None
Intrahepatic biliary tree: Unremarkable
Extrahepatic biliary tree: Unremarkable

GASTROINTESTINAL SYSTEM

Alimentary tract examined: Yes
See Evidence of Injury section: No
See Evidence of Medical Intervention section: No
See Postmortem Changes section: No
Stomach contents vol (mL): 10
Stomach contents description:
brown liquid
Appendix found: Yes

Esophagus

Course: Normal course without fistulae
Mucosa: Gray-white, smooth and without lesions

Stomach

Mucosa: Usual rugal folds
Pylorus: Patent and without muscular hypertrophy

Small Intestine

Luminal contents: Partially digested food
Mucosa: Unremarkable
Caliber and continuity: Appropriate caliber without interruption of luminal continuity

Colon

Luminal contents: Formed stool
Mucosa: Unremarkable
Caliber and continuity: Appropriate caliber without interruption of luminal continuity

Pancreas

Form: Normal tan, lobulated appearance

GENITOURINARY SYSTEM

Genitourinary system examined: Yes
See Evidence of Injury section: No
See Evidence of Medical Intervention section: Yes
See Postmortem Changes section: No

Kidneys

Kidneys capsules: Thin, semitransparent
Cortical surfaces: Smooth
Cortices: Normal thickness and well-delineated from the medullary pyramids
Calices, pelves and ureters: Non-dilated and free of stones and masses
Kidney right (g): 170
Kidney left (g): 190
Urine volume (mL): 0
Urine description:

Urinary Bladder

Urinary bladder mucosa: Gray-tan and smooth

Female

Female: Yes

Breasts

Breast tissue: Usual fibrous and adipose mixture
Breast tissue comments:

Female Genital Tract

Uterus: Other - See comments
Uterine cervix: Unremarkable
Fallopian tubes: Unremarkable
Ovaries: Unremarkable
Vagina: Unremarkable

**Other female genital tract
comments:**

The intact uterus is boggy and enlarged. The endometrial surfaces are red-tan and irregular. Medical intervention is in place.

RETICULOENDOTHELIAL SYSTEM

Reticuloendothelial system examined: Yes
See Evidence of Injury section: No
See Evidence of Medical Intervention section: No
See Postmortem Changes section: No

Spleen

Spleen (g): 110
Spleen parenchyma: Moderately firm
Spleen capsule: Intact
Spleen white pulp: Prominent

Bone Marrow

Color: Red-brown, homogeneous and ample

Lymph Nodes

Regional adenopathy: No adenopathy

Thymus

Thymus (g):

Parenchyma: Absent (involution by adipose tissue)

ENDOCRINE SYSTEM

Endocrine system examined: Yes

See Evidence of Injury section: No

See Evidence of Medical Intervention section: No

See Postmortem Changes section: No

Pituitary Gland

Size: Normal

Thyroid Gland

Position: Normal

Size: Normal

Parenchyma: Homogeneous

Adrenal Glands

Adrenal right (g): 10

Adrenal left (g): 15

Size: Normal

Parenchyma: Other - See comments

Other adrenal gland comments:

The right adrenal is unremarkable. The left adrenal gland demonstrates hemorrhagic parenchyma.

MUSCULOSKELETAL SYSTEM

Musculoskeletal system examined: Yes

See Evidence of Injury section: No

See Evidence of Medical Intervention section: No

See Postmortem Changes section: No

Bony framework: Unremarkable

Musculature: Unremarkable

Subcutaneous soft tissues: Unremarkable

ADDITIONAL COMMENTS

✓ Received separately is a placenta and products of conception.

The products of conception includes disrupted, variably identifiable fetal parts.

The placenta consists of an overall, unremarkable, intact disc with <10% maternal surface infarction. There is no evidence of purulence on either the maternal or fetal surface. No evidence of placental abruption is on the maternal surface.

The umbilical cord is trivascular.

Report Tracking

Reported by: Rebecca Asch-Kendrick, MD

Verified by: Lauren E Dvorscak, MD on 5/25/2017 9:41:14 AM

Reviewed and approved by: Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

Microscopic description:

Heart: no significant histopathologic diagnosis

Lungs: Organizing thrombi in large and small vessels bilaterally-- histologically composed of layered fibrin admixed with erythrocytes and leukocytes into characteristic "lines of Zahn"; no definitive evidence of fetal squamous cells or mucin (AE1/AE3 stain), acellular proteinaceous debris and fluid within alveoli; abundant alveolar macrophages

Kidney: fibrin thrombi within glomerular vasculature

Adrenal: predominately cortical extravasation of erythrocytes

Liver: no significant histopathologic diagnosis

Uterus: exuberant neutrophilic exudate on endometrial surface; arias-stella reaction

Cervix: dilated vascular spaces within cervical stroma associated with interstitial erythrocytes and neutrophils

Placenta: abundant acute inflammation associated with maternal surface

Products of conception: Fetal parts identified

*Unless otherwise indicated sections are stained only with hematoxylin and eosin (H&E).

Block	Tissue Location	Description	Stain
A1	Uterus		
A2	Uterus and cervix		
A3	Heart, liver and left adrenal		
A4	Right lung		
A5	Left lung		
A6	Kidneys, left and right		
A7	Brain, hippocampus		
A8	POC		
A9	Placenta		

Report Tracking

Reported by:

Rebecca Asch-Kendrick, MD

Verified by:

Lauren E Dvorscak, MD on 5/25/2017 1:07:46 PM

Reviewed and approved by:

Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

Medical Investigator

Lauren E Dvorscak, MD

Medical Investigator Trainee

Rebecca Asch-Kendrick, MD

Autopsy date: 2/4/2017 9:13:00 AM

Study type(s): Microbiology cultures

Results of ancillary studies:

Microbiology cultures:

Uterine swab (A): few Aerococcus species

Uterine tissue (A): no growth on aerobic culture, rare Dialister micraerophilus isolated on anaerobic culutre

Uterine swab (B): rare Aerococcus species

Uterine tissue (B): no growth on aerobic culture, rare growth of Aerococcus species on anaerobic culture

Heart blood: Klebsiella oxytoca, Citrobacter species, Streptococcus anginosus, Streptococcus salivarius group, Streptococcus, alpha, not entero- or pneumo-coccus

Lung, right: moderate growth Streptococcus, alpha, not entero- or pneumo-coccus, few Streptococcus salivarius group, rare Streptococcus anginosus

Lung, left: moderate growth Streptococcus salivarius group, moderate growth Streptococcus alpha, not entero- or pneumo-coccus

Report Tracking

Reported by: Rebecca Asch-Kendrick, MD
Verified by: Lauren E Dvorscak, MD on 5/25/2017 10:08:45 AM
Reviewed and approved by: Lauren E Dvorscak, MD on 5/25/2017 1:31:28 PM

Case Number: 2017-00704
Decedent Name: ATKINS, KEISHA
Pathologist: Lauren E Dvorscak, MD
Fellow/Resident: Rebecca Asch-Kendrick, MD
Date of Examination: 2/4/2017 9:13:00 AM

Morphology technican(s) present

Yellow Sheet	Morphology Technician
LabOther	Angelea Maestas
Attendees	Angelea Maestas
Identification	Angelea Maestas
Autopsy	Angelea Maestas
Evidence	Angelea Maestas
Evidence	Angelea Maestas
Radiology	Angelea Maestas
Retention	Angelea Maestas

Morphology technican supervisor(s) present

Yellow Sheet	Morphology Technician Lead
Identification	Brandon Phinney
Autopsy	Kimberly Marquez
Evidence	Brandon Phinney
Radiology	Brandon Phinney
Retention	Brandon Phinney
LabOther	Cassandra Toledo
Attendees	Brandon Phinney

Autopsy attendees

Other morphology technicians present:

Daria Koehlert-Student Tech

Specimens obtained for laboratory testing

HIV serology:	No
HIV spin and store:	Yes
HCV/HBV serology :	No
Influenza serology:	No
Other serology:	No
Freezer protocol:	No
DNA card:	Yes
Metabolic screen:	No
Cytogenetics:	No
Med-X protocol:	No
Urine dipstick:	No
Blood cultures (bacterial):	Yes
Lung cultures (bacterial):	No
CSF culture (bacterial):	No
Spleen culture (bacterial):	No
Stool culture (bacterial):	No
Other bacterial culture (specify):	
x2 Uterine tissue(A,B)	
x2 Uterine swabs(A,B)	
Mycobacterial culture (lung):	No
Mycobacterial culture (other):	No
Viral Cultures:	No

Approach to autopsy dissection

Rokitansky evisceration:	Yes
Virchow evisceration:	No
Modified evisceration:	No

Special autopsy techniques

HIV serology: No
Pericranial membrane removal: No
Neck anterior dissection: No
Neck posterior dissection: No
Facial dissection: No
Vertebral artery dissection (in situ): No
Cervical spine removal: No
Layered anterior trunk dissection: No
Anterolateral rib arc dissection: No
Back dissection: No
Posterior rib arc dissection: No
Extremity soft tissue dissection: No
Eye enucleation: No
Inner middle ear evaluation: No
Maxilla or mandible resection: No
Spinal cord removal (anterior): No
Spinal cord removal (posterior): No
Other dissection(s):

Tissues retention

Stock jar with standard tissue retention: Yes
Rib segment: Yes
Pituitary gland: Yes
Breast tissue (women only): Yes
Brain retention: No
Spinal cord retention: No
Cervical spine retention: No
Heart retention: No
Heart-lung block retention: No
Rib cage retention: No
Long bone retention: No
Other retention,specify:

Disposition of tissues retained for extended examination

Specimen outcome: Not applicable; no tissues were retained for extended examination.

Number of scene photos produced by the OMI

Scene Photos: 0

Number of autopsy photos produced by the OMI

Autopsy Photos: 26

Evidence collected

FBI blood tube: No
 Blood spot card: No
 APD blood card: No
 Thumbprint: Yes
 Fingerprints: No
 Palmprints: No
 Print hold: No
 Oral swab: No
 Vaginal swab: No
 Anal swab: No
 Other swab: No
 Fingernails: No
 Scalp hair: No
 Pubic hair: No
 Pubic hair combing: No
 Projectile(s): No
 Retain clothing: No
 Retain valuables: No
 Retain trace evidence: No
 Retain body bag: No
 Retain hand bags: No
 Ligature: No
 Other evidence retained:

Personal effects

Property Type	Property Description	Property Detail
Valuables	Hair tie	n/a
Valuables	Misc Body Jewelry	n/a

Clothing

Property Type	Property Description	Property Detail
Clothing	Hat	n/a
Clothing	Shirt	n/a
Clothing	Gloves	n/a
Clothing	Blanket or Sheet	n/a



NMS Labs

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Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

Toxicology Report

Report Issued 04/10/2017 15:01

To: 20141

New Mexico Office of Medical Investigators
Attn: Yvonne A. Villalobos
1101 Camino de Salud NE- Ste B
Albuquerque, NM 87105

Patient Name ATKINS KEISHA

Patient ID 2017-00704

Chain 74405

Age 23 Y DOB 06/07/1993

Gender Female

Workorder 17099868

Page 1 of 3

Positive Findings:

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Oxycodone - Free	38	ng/mL	001 - Antemortem Blood
Oxymorphone - Free	1.0	ng/mL	001 - Antemortem Blood

See Detailed Findings section for additional information

Testing Requested:

<u>Analysis Code</u>	<u>Description</u>
8051B	Postmortem, Basic, Blood (Forensic)

Specimens Received:

<u>ID</u>	<u>Tube/Container</u>	<u>Volume/ Mass</u>	<u>Collection Date/Time</u>	<u>Matrix Source</u>	<u>Miscellaneous Information</u>
001	Lavender Vial	2 mL	02/03/2017 17:05	Antemortem Blood	
002	Blue Vial	2.5 mL	02/03/2017 17:05	Antemortem Blood	
003	Foil Top Vial	3.25 mL	02/03/2017 17:05	Antemortem Blood	

All sample volumes/weights are approximations.

Specimens received on 03/31/2017.



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Workorder 17099868
Chain 74405
Patient ID 2017-00704

Page 2 of 3

Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Oxycodone - Free	38	ng/mL	5.0	001 - Antemortem Blood	LC-MS/MS
Oxymorphone - Free	1.0	ng/mL	1.0	001 - Antemortem Blood	LC-MS/MS

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Reference Comments:

1. Oxycodone - Free (OxyContin®; Roxicodone®) - Antemortem Blood:

Oxycodone is a DEA Schedule II controlled semi-synthetic narcotic analgesic. It is used to control pain associated with such ailments as bursitis, injuries, simple fractures and neuralgia. The addiction liability of oxycodone is about the same as for morphine. This compound should be administered in the smallest effective dose and as infrequently as possible. The usual adult dose of the hydrochloride salt is 5 mg every 6 hr.

Following the oral administration of oxycodone as both sustained-release (Oxycontin®) and regular formulations, peak plasma concentrations of the compound are generally less than 100 ng/mL; however, the sustained-release preparation may also result in peak concentrations of oxycodone less than 10 ng/mL serum. Oxymorphone is a pharmacologically active metabolite of oxycodone that may be seen in blood in very low concentrations.

In overdose, oxycodone can produce stupor, coma, muscle flaccidity, severe respiratory depression, hypotension and cardiac arrest. In twelve oxycodone-related deaths, blood concentrations averaged 1600 ng/mL (range 240 to 8400 ng/mL). However, sustained-release preparations appear to produce adverse reactions, up to and including death, at concentrations of oxycodone well below 1000 ng/mL, especially in combination with other central nervous system depressants, depending on use pattern and route of administration.

2. Oxymorphone - Free (Numorphan®; Opana®; Oxycodone Metabolite) - Antemortem Blood:

Oxymorphone is a Schedule II semisynthetic opioid analgesic. It is indicated for use in the relief of moderate to severe pain and as a preanesthetic medication. The compound may be administered by injection or by mouth. Oral preparations are available as immediate-release tablets (5 or 10 mg) and as extended-release tablets (5 to 40 mg). Oxymorphone is also a pharmacologically active metabolite of oxycodone.

The mean oral bioavailability of oxymorphone is approximately 10%. The compound is extensively metabolized by reduction to 6-oxymorphol and conjugation to oxymorphone glucuronide and oxymorphone sulfate. Approximately 50% of an oral dose of oxymorphone is eliminated in the urine over 5 days primarily as conjugated oxymorphone and smaller amounts of free oxymorphone and free and conjugated 6-oxymorphol. The mean elimination half-life of oxymorphone is approximately 7.5 to 9.5 hours.

Thirty minutes following a single 5, 10, or 20 mg immediate-release tablet, mean peak plasma concentrations were 1.1, 1.9 and 4.4 ng/mL, respectively. Twenty mg extended-release tablets given every 12 hours for 3 days resulted in a mean peak plasma concentration of 2.5 ng/mL within 3.5 hours following the last dose. Doubling the dose to 40 mg increased the mean peak plasma concentration to 4.5 ng/mL.

Adverse effects of oxymorphone are typical of the opioid group of compounds. Peripheral blood concentrations in 20 oxymorphone related fatalities ranged from 30 to 120 ng/mL.

Sample Comments:

001 Physician/Pathologist Name: Rebecca Asch-Kendrick,MD/Lauren E Dvorscak,MD

Chain of custody documentation has been maintained for the analyses performed by NMS Labs.

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded six (6) weeks from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.



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Workorder 17099868
Chain 74405
Patient ID 2017-00704

Page 3 of 3

Workorder 17099868 was electronically signed on 04/10/2017 14:15 by:

William H. Anderson

William H. Anderson, Ph.D., F-ABFT
Forensic Toxicologist

Analysis Summary and Reporting Limits:

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Acode 50016B - Opiates - Free (Unconjugated) Confirmation, Blood (Forensic) - Antemortem Blood

-Analysis by High Performance Liquid Chromatography/
TandemMass Spectrometry (LC-MS/MS) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
6-Monoacetylmorphine - Free	1.0 ng/mL	Hydromorphone - Free	1.0 ng/mL
Codeine - Free	5.0 ng/mL	Morphine - Free	5.0 ng/mL
Dihydrocodeine / Hydrocodol - Free	5.0 ng/mL	Oxycodone - Free	5.0 ng/mL
Hydrocodone - Free	5.0 ng/mL	Oxymorphone - Free	1.0 ng/mL

Acode 52198B - Cannabinoids Confirmation, Blood (Forensic) - Antemortem Blood

-Analysis by High Performance Liquid Chromatography/
TandemMass Spectrometry (LC-MS/MS) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
11-Hydroxy Delta-9 THC	1.0 ng/mL	Delta-9 THC	0.50 ng/mL
Delta-9 Carboxy THC	5.0 ng/mL		

Acode 8051B - Postmortem, Basic, Blood (Forensic) - Antemortem Blood

-Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Amphetamines	20 ng/mL	Fentanyl / Acetyl Fentanyl	0.50 ng/mL
Barbiturates	0.040 mcg/mL	Methadone / Metabolite	25 ng/mL
Benzodiazepines	100 ng/mL	Methamphetamine / MDMA	20 ng/mL
Buprenorphine / Metabolite	0.50 ng/mL	Opiates	20 ng/mL
Cannabinoids	10 ng/mL	Oxycodone / Oxymorphone	10 ng/mL
Cocaine / Metabolites	20 ng/mL	Phencyclidine	10 ng/mL

-Analysis by Headspace Gas Chromatography (GC) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	5.0 mg/dL